

THE ILLUSTRATED LONDON NEWS

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SATURDAY, FEBRUARY 25, 1939.



**GUARDING THE CONCEALED CONCRETE GUN-EMPLACEMENTS WHICH FORM PART OF THE BELGIAN "MAGINOT LINE":
SENTRIES OF THE SPECIAL TROOPS WHICH MAN THE DEFENCES BUILT ALONG THE FRONTIER.**

A system of fortifications, which can be compared with the French Maginot Line and the German Siegfried Line, has been constructed along the frontiers of Belgium. Permission for these defences to be photographed was recently given by General Headquarters of the Belgian Army for the first time, and we now reproduce these photographs here and on pages 278-279. Belgium has a frontier of 831 miles to defend, and her intention to make it impregnable was shown when there was

an extraordinary budget for 1937 of some £6,600,000 to meet improvements in the fortifications of the eastern frontier. To man the underground fortresses and concrete "pill-boxes" and gun-emplacements in an emergency, Belgium has an Army of 80,000 men, with over 4000 officers, which includes a mechanised cavalry corps and one division of special frontier troops. The photograph above shows sentries guarding concrete gun-emplacements. (Central Press.)

THE BELGIAN FRONTIER FORTIFICATIONS: A "MAGINOT LINE"

PHOTOGRAPHS BY

WITH MILES OF ANTI-TANK BARRIERS AND MOAT TANK-TRAPS.

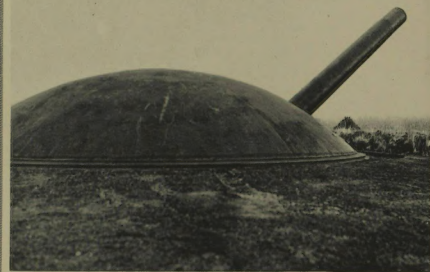
CENTRAL PRESS.



OCCUPYING A COMMANDING POSITION IN A VILLAGE STREET: A GUN (SEEN ON RIGHT) IN THE BELGIAN FORTIFICATIONS SITED IN SUCH A WAY THAT IT CAN SWEEP THE ROADWAY IN FRONT.



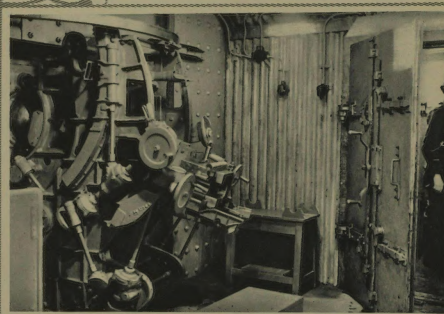
A VIEW DOWN ONE OF THE TUNNELS WHICH FORM PART OF THE SYSTEM OF UNDERGROUND DEFENCES.



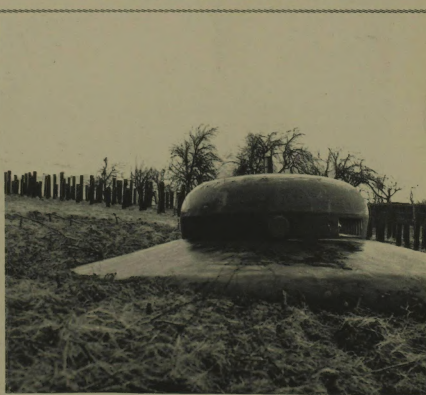
PROTECTED BY A REINFORCED CONCRETE DOME WHICH WILL WITHSTAND ARTILLERY OR AIR BOMBARDMENT: A HEAVY GUN IN THE FORTIFICATIONS.



LEAVING THE UNDERGROUND DEFENCES FOR A REST-CAMP: SPECIAL FRONTIER TROOPS EMERGING FROM A "PILL-BOX" WHICH GUARDS AN ENTRANCE.



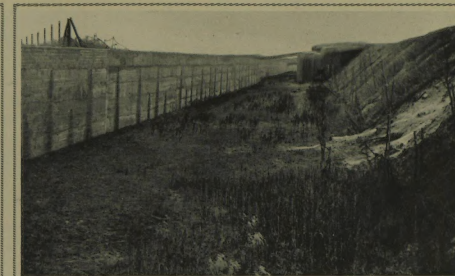
AN ARTILLERY POSITION IN THE FORTIFICATIONS: THE INTERIOR OF A GUN-EMPLACEMENT; SHOWING (LEFT) THE BREACH-MECHANISM OF A GUN.



A CONCRETE PILL-BOX FROM WHICH ANTI-TANK GUNS CAN FIRE ON TANKS HALTED BY THE ANTI-TANK BARRIER (SEEN IN BACKGROUND).



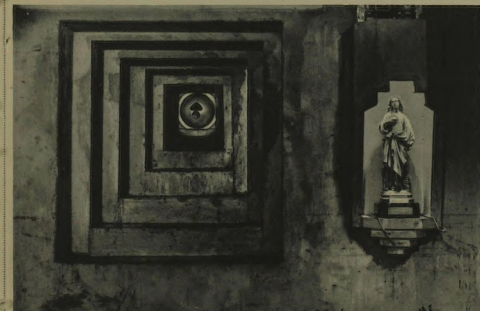
AN INTERESTING FEATURE OF THE BELGIAN "MAGINOT LINE": STEEL RAILINGS STRENGTHENED BY SUPPORTS AS A BARRIER TO TANK ATTACKS.



FORMING A CONCEALED TRAP INTO WHICH ATTACKING TANKS MAY FALL: THE DRY "MOAT" AS A FEATURE OF MODERN DEFENCES.



STRETCHING FOR MILES ALONG THE BELGIAN FRONTIER AND PROVIDING SECURITY AGAINST SUDDEN ATTACK: AN ANTI-TANK BARRIER OF SHORT STEEL POSTS WHICH IS PROTECTED BY BARBED-WIRE ENTANGLEMENTS AND BY MINES.



SHOWING A FIGURE OF ST. BARBARA, THE PATRON SAINT OF ARTILLERYMEN, NEAR BY: A LOOPHOLE FOR A MACHINE-GUN IN A CONCRETE "PILL-BOX."



COOKING ARRANGEMENTS FOR THE GARRISON OF THE FORTIFICATIONS: A KITCHEN BUILT AT A DEPTH OF 246 FT. BELOW GROUND-LEVEL.

Our readers will remember that we published photographs showing details of the French Maginot Line and the German Siegfried Line in our issue of October 29 last year. Here we show some of the features of the Belgian fortifications which have been constructed to prevent the country being

overwhelmed by a sudden attack and to enable it to preserve its neutrality. As with the French and German systems, methods have been devised to frustrate attacks by tanks, and the defences include anti-tank barriers of short steel posts which stretch for miles along the frontier. These barriers are

made more effective by barbed-wire entanglements and by being heavily mined, while anti-tank guns are sited in concrete gun-emplacements in such a way that their fire can be directed on tanks held up by the obstacle. In some places tank-traps, resembling dry moats, have been constructed, into

which the tank falls and is then destroyed by gun-fire from "pill-boxes." The frontier troops who garrison the fortifications spend frequent periods in rest-camps as they live almost entirely underground when on duty, even their meals being cooked in kitchens built 246 ft. below the ground.



By ARTHUR BRYANT.

TWO swallows do not make a spring, and a soft, sunny day in February scarcely justifies a sensible man in thinking winter is over. But it is something to be happy about when it comes, and which, taken as it should be, can leave behind a reserve of strength and contentment sufficient to tide over a good many grim, black March days. "It's been a pleasure being about this last week," a country neighbour of mine remarked this morning. I felt it myself, taking my first morning's walk in the fields after a long spell of the pavements. There were crocuses when I looked out on the bed beneath my garden window, and the first violets had made a rather shy and uncertain appearance a few yards away. As I walked down the slope to the farm, the Buckinghamshire horizon was a deeper blue than usual and slanting sunshine was making Quainton Hill an outpost of the south. The birds were singing from the dark, leafless trees, and the fresh tenderness of the air recalled a river valley in Périgord experienced on just such a day and at just such a time as this, *en route* to an Iberian holiday two or three years ago. And I started to sing merely because I was glad to be alive and walking where I was.

There was no particular reason for this, or, at least, what the modern world calls a reason. Nothing I had read in my morning paper had given me the least cause to suppose

were probably at that moment unaware of any particular reason for increased happiness. An hour or so before, they had passed from their homes in city or suburban street, in some overcrowded, under-ventilated vehicle, to an office or factory, there to remain immolated for the rest of the day. And how, poor exiles, could they be so much aware that, though it was not yet mid-February, it was a spring day. Here was our common mother, Nature, handing out a free bonus of unearned happiness to all mankind, and most people quite unconscious of what was being so splendidly offered them. And as this particular

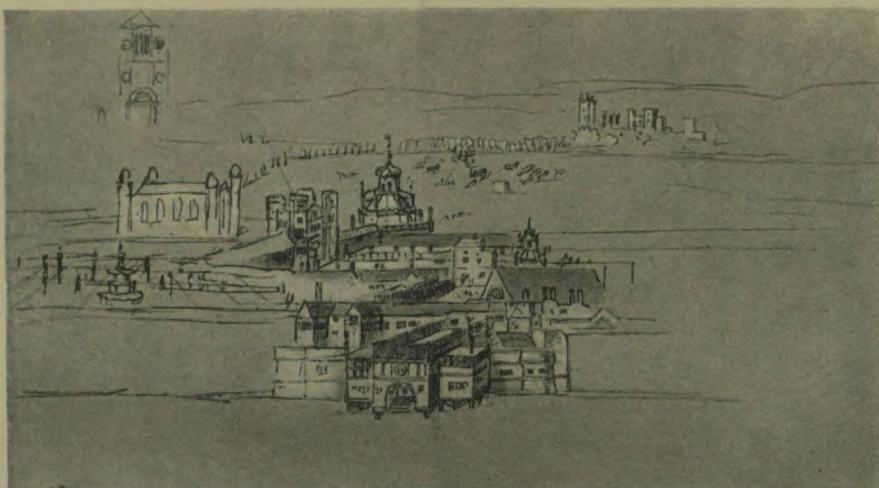
which his mind is unaware. For a few minutes he feels a gladness which he cannot account for. And perhaps clinging to his strap over his evening paper on the way home, he learns that it has been a beautiful and spring-like day.

Still, compared with the countryman, his apprehension of nature's unexpected bounty must necessarily be very limited. One cannot exactly breathe the spring in the atmospheric environment of a third-class smoker on the early morning "breadwinner." And I still feel that statisticians, who have done so much to enable humanity to take stock of its material condition, might apply their minds with advantage to this question of measuring human happiness and showing the comparative ways in which it may be obtained. For so much of it seems to be wasted and never enjoyed at all. Indeed, often men and women appear to stumble on it quite accidentally and in the last places where they expected to find it. Thus, in the war, one was constantly encountering men who seemed surprised at their own ability to enjoy such elementary pleasures as a rough meal, a hot bath, or even a quiet ten minutes resting in the sunlight on the outskirts of some ruined village. And in the normal, piping times of peace, it is astonishing how many ordinary citizens seem to go through life without relishing these things at all.

The more one studies the immediate causes of happiness, the more one is driven to the realisation

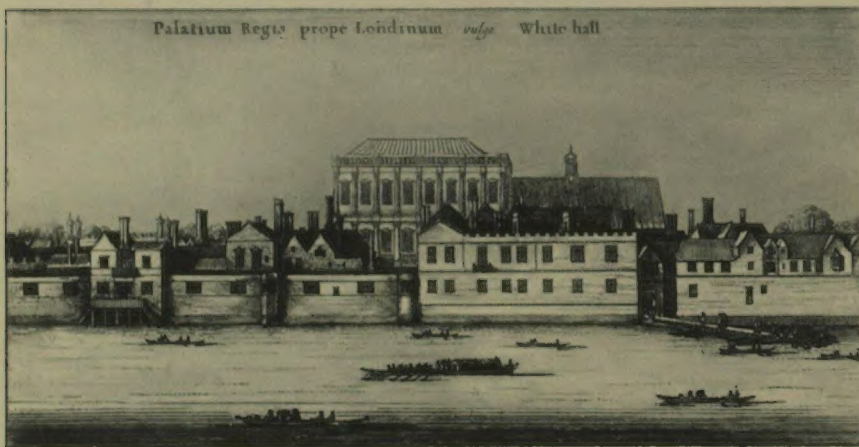
that in such matters man is not so much a rational creature as an animal who can only disregard the natural laws ordained for his being at the expense of losing his birthright of elemental satisfaction in existence. Sage Diogenes was right when he told the great conqueror in response to his benevolent enquiry, that all he could do for him was to get out of his sunlight. There are many who would be the happier if the rich and the powerful and the busybody well-meaning would get out of theirs. For civilised, urbanised man the March of Progress has too often proved but a march into the shadows. From him the simpler

morning would never recur, it seemed rather a shocking waste. Statisticians sometimes work out the number of working hours lost in a day by traffic congestion or the damage in pounds, shillings and pence caused by a London fog. But no statistician that I know of has ever worked out in units of human



THE PALACE OF WHITEHALL AS IT APPEARED IN THE SIXTEENTH CENTURY: A DRAWING BY ANTONIE VAN DEN WIJNGAERDE, NOW AT THE BODLEIAN LIBRARY, OXFORD, WHICH WAS PROBABLY MADE SOME TWENTY YEARS AFTER THE BUILDING HAD BECOME A ROYAL RESIDENCE.

Reproduced from "Medieval London" by Courtesy of the Publishers, Seeley Service and Co.



A VIEW OF WHITEHALL PALACE FROM THE RIVER: AN ENGRAVING MADE ABOUT 1647 BY W. HOLLAR (1607-1677).

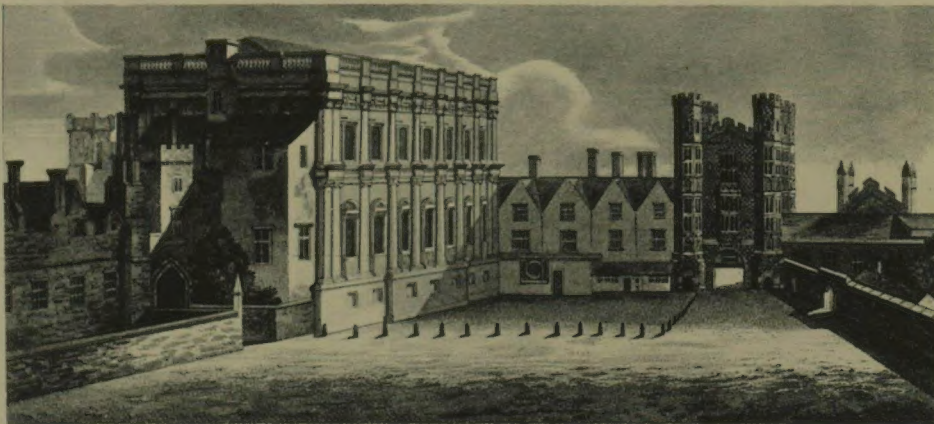
On pages 286-287 in this issue we reproduce photographs of some of the interesting discoveries made on the site of Whitehall Palace. Here we show the appearance of the royal residence in the sixteenth and early seventeenth century. The diaper decoration on the Holbein Gate is of interest in view of the fact that a similar chequer-pattern of black and white squares was found on the wall at the south end of the Great Hall which has been exposed during the excavations now taking place.

that life was going to become in any way more comfortable or easier for me or my fellow creatures. The threat of war, if it is a threat, was no further away: the record of human crime and folly was as long as it had been the day before: my modest holding of shares had registered no sensational rise, nor, indeed, a rise of any sort. Nor had my correspondence brought even the slightest ray of pleasurable expectation: it had just been the same troublesome kind of correspondence it usually is, some of it vexing and the remainder merely dull. Yet I was happy: at least ten times more so than I had been at the same hour on the previous day. For I was in the country and walking in an island of spring in the midst of winter.

And if these circumstances could gladden me and my country neighbour driving his cattle down the lane, they would presumably have done the same to any other human beings who had been there to share them. But in that deserted and fast-emptying countryside, few of them were. "Lord," exclaimed rustic Puck, "what fools these mortals be!" For living in a sophisticated age in a sophisticated and civilised land, the vast majority of my fellow citizens

happiness the dead loss involved in so many millions living and working under conditions which cut them off from the natural sources of their happiness.

But perhaps I am a little over-estimating the degree of that divorce between nature and urbanised humanity. Every spring and fall, in cellars far below the level of the ground, and cut off from sight and scent of the changing seasons, the stored grape stirs and responds to the rhythm of the universe. So the toiler in factory and office, bending over his indoor task or herded panting into tube, coach or packed railway carriage, may be made dimly and subconsciously aware that the natural world outside his cruelly limited vision is undergoing one of its miraculous transformations. His excited blood quickens its beat and pace in response to a call of



SHOWING THE HOLBEIN GATE ON THE RIGHT, WITH ITS DIAPER DECORATION OF ALTERNATE SQUARES OF STONE AND FLINT: THE PALACE OF WHITEHALL IN THE EARLY PART OF THE REIGN OF CHARLES I.; FROM A DRAWING BY HOLLAR.

joys that Nature—the harsh and bountiful—offers all her free children, have been snatched away. For this fleeting spring day was meant for all mankind's enjoyment—a source of happiness and vitality in itself and like the rainbow a pledge that life has a consistent succession of blessings for the passing generations. If only for a few hours, "spring is come home with her world-wandering feet." And there is gladness for everyone in that, enough, one would have thought, to make a banker dance, or even one of the newer and gloomier kind of Communist poets.

PAGHAM HARBOUR AS IT WOULD APPEAR AS A FLYING-BOAT BASE.

DRAWN BY OUR SPECIAL ARTIST, G. H. DAVIS, FROM PLANS AND INFORMATION SUPPLIED BY MR. M. H. BAILLIE-SCOTT.



AN ALTERNATIVE TO SOUTHAMPTON AS AN IMPERIAL AIRWAYS' MARINE TERMINAL : THE SITE AT PAGHAM HARBOUR.

The selection of a marine terminal for the Empire Flying-Boat and similar commercial services has been occupying the attention of Air Ministry authorities for some time past, and a scheme to transform Pagham, a disused and desolate half-tide harbour on the west Sussex coast, is the most recent proposal to come under consideration. The scheme has been prepared and laid before the Air Ministry by Mr. M. H. Baillie-Scott on behalf of the owner. It provides for a sea barrier dam to be erected across the mouth of Pagham Harbour, with a controlled weir and gate, and by this means the tidal waters can be held up inside the harbour to the height of high-water neap tides. This will convert it into a permanent lake, and the additional depth of water necessary will be obtained by dredging; the dredged material being usefully employed in reclaiming the estuaries and low-lying banks of the harbour. A ring dyke, or canal, round the margin of the harbour and landing-ground area also forms part of the scheme. The roughly estimated cost of transforming the harbour, and forming

the landing-ground, with the necessary harbour and drainage works, is in the nature of £270,000. In addition, buildings and communications may well run into £250,000, and the acquisition of the site £195,000. A comparison of these figures with those reported regarding Southampton Water suggest that Pagham would be the cheaper in the long run, and both would appear less costly than conversion of Langstone Harbour. Pagham has considerable advantages arising from the complete ownership of this large self-contained area of land and water which greatly facilitates safe and effective control by the ground organisation. The whole of the surrounding countryside is low-lying and free of all obstructions, so that aircraft can approach at low altitudes from every direction in fog with the maximum of safety. The site is three miles from Bognor and four miles from Chichester and short railway extensions from either of these towns to the site will provide a seventy-mile electrified railway connection between the airport and the Victoria Station terminal of Imperial Airways in London.

THE METHODS USED IN THE ELECTION OF A NEW POPE: VOTING IN THE SISTINE CHAPEL; SMOKE SIGNALS AND THE TRIPLE CROWN.

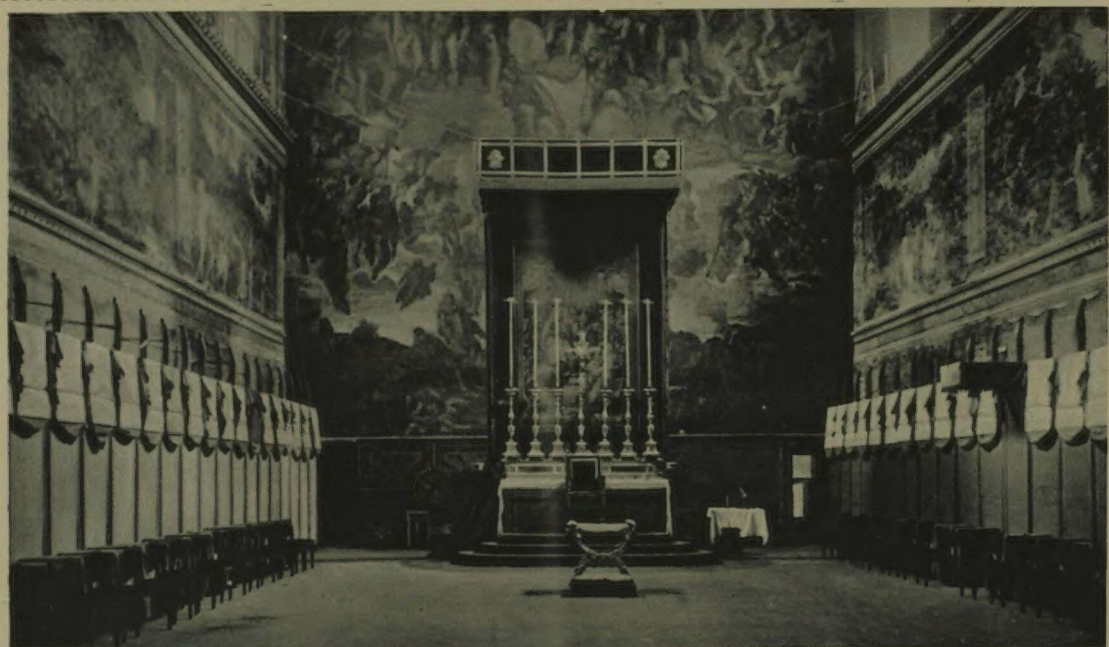


GATHERED TOGETHER FOR THE ELECTION OF A SUCCESSOR TO POPE PIUS XI.: THE CARDINALS CONSIDERING THEIR VOTE IN THE SISTINE CHAPEL DURING THE CONCLAVE.

A CARDINAL REGISTERING HIS VOTE IN THE SISTINE CHAPEL—THE SUCCESSFUL CANDIDATE MUST RECEIVE A TWO-THIRDS MAJORITY, AND NO MEMBER MAY VOTE FOR HIMSELF.



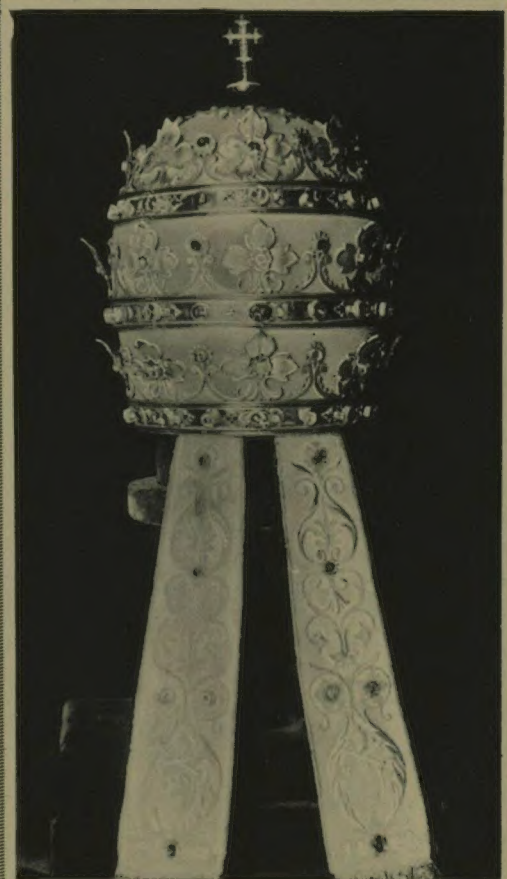
A SIGNAL WHICH SHOWS THE RESULT OF A BALLOT BY ITS DENSITY: SMOKE FROM THE BURNING VOTING-PAPERS WATCHED BY THE WAITING CROWD.



SHOWING ON EITHER SIDE THE CANOPIED "CELLS" IN WHICH THE CARDINALS SIT TO RECORD THEIR VOTES (SEE TOP, LEFT): THE INTERIOR OF THE SISTINE CHAPEL. (Keystone.)



THE VATICAN CITY AS IT APPEARS FROM THE AIR: TERRITORY COMPRISING OVER A HUNDRED ACRES IN WHICH THE POPE HAS HAD TEMPORAL AUTHORITY SINCE THE LATERAN TREATIES. (A.P.)

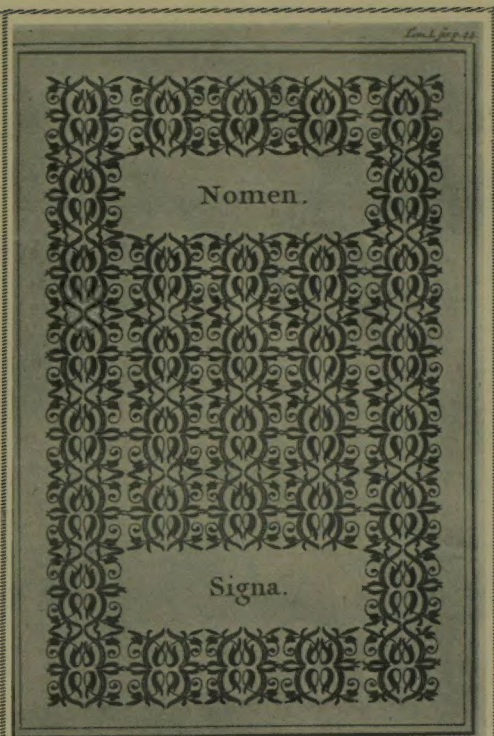


THE TRIPLE CROWN WITH WHICH THE NEW POPE WILL BE CROWNED IMMEDIATELY AFTER HIS ELECTION BY THE CARDINALS. (A.P.)

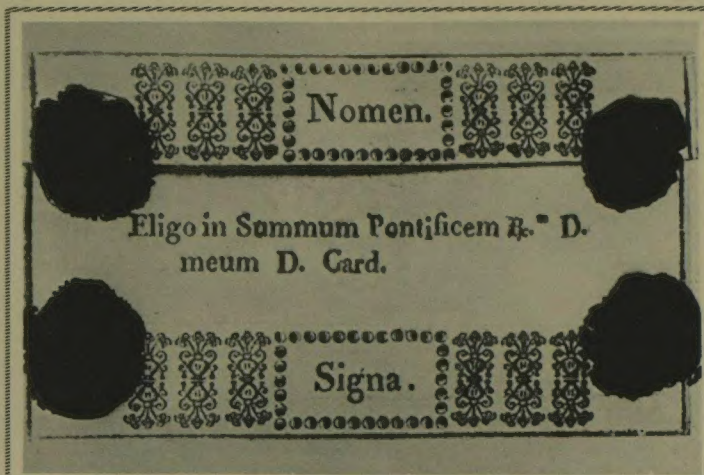
The Conclave of Cardinals to elect a new Pope was arranged to open on March 1, and, until a successor to Pope Pius XI. has been chosen, the members of the Sacred College will be shut off from the world in their apartments round the Cortile di San Damaso from that date. On this and the facing page we illustrate by drawings and photographs the ceremonies connected with the election. The

voting takes place in the Sistine Chapel and the ballot-papers are burnt in a stove near the altar. The waiting crowds can tell by the smoke whether the ballot has been conclusive or not, as the papers are mixed with wet straw if there has been no result and the smoke is thick and black; while after a successful ballot the papers are mixed with dry straw and the smoke is white and light.

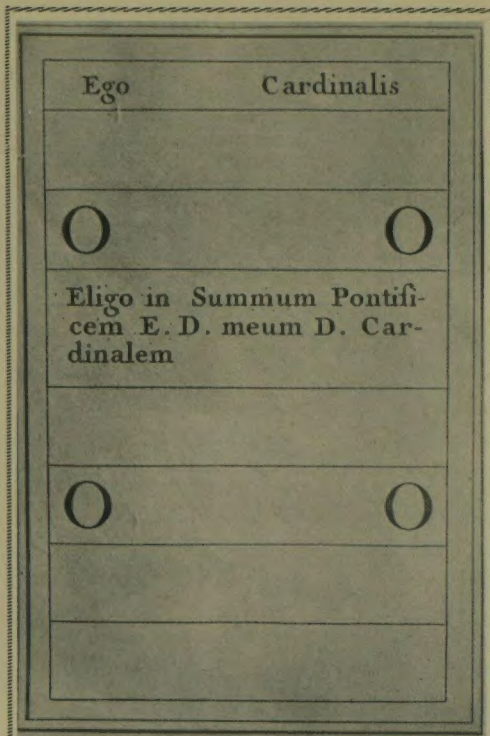
THE ELECTION OF A NEW POPE: A BALLOT-PAPER; AND OTHER DETAILS OF THE CONCLAVE.



COVERED WITH ARABESQUES TO RENDER THE PAPER OPAQUE: THE OUTSIDE OF AN UNFOLDED BALLOT-PAPER.



FOLDED AND SEALED AFTER BEING FILLED IN: A BALLOT-PAPER AS IT IS PLACED IN THE CHALICE DURING THE VOTING IN THE SISTINE CHAPEL. (S. and G.)



SHOWING THE THREE SECTIONS WHICH MUST BE FILLED IN BY THE VOTER: THE INSIDE OF A BALLOT-PAPER.



ENSURING SECRECY DURING THE CONCLAVE: GUARDS AT THE LOCKED DOORS BEHIND WHICH THE CARDINALS REMAIN UNTIL A POPE HAS BEEN ELECTED. (Keystone.)



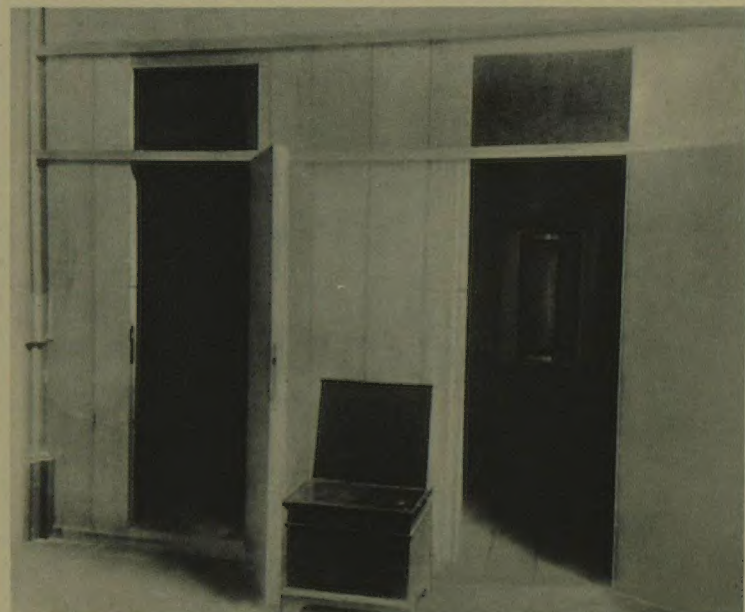
A MEANS OF COMMUNICATING THE ELECTION OF A POPE TO THE OUTSIDE WORLD: THE STOVE IN THE SISTINE CHAPEL IN WHICH THE BALLOT-PAPERS ARE DESTROYED. (Keystone.)



PASSING PERISHABLE FOOD THROUGH A NARROW REVOLVING GATE DURING A CONCLAVE—THE CONCLAVISTS ARE ENTIRELY SHUT OFF FROM THE OUTSIDE WORLD. (A.P.)



INCLUDED AMONG THE ATTENDANTS WHO MUST REMAIN SEALED UP IN THE VATICAN BUILDING DURING THE CONCLAVE: NUNS, WHO WILL COOK AND CATER FOR THE MEMBERS OF THE SACRED COLLEGE, IN THE KITCHENS. (Keystone.)



SHOWING THE METHOD BY WHICH NEWS OF THE OUTSIDE WORLD IS CONVEYED TO THE CONCLAVISTS: A REVOLVING DRUM IN WHICH LETTERS AND OTHER COMMUNICATIONS ARE PLACED. (Planet.)

At each meeting of the Cardinals in the Sistine Chapel for the purpose of casting their votes for a new Pope, fresh ballot-papers are provided. These have three sections in which the member of the Sacred College writes his own name; that of the candidate he supports; and a secret symbol whereby he can recognise his own paper. Each Cardinal folds his paper at the top and bottom and seals it

in four places. Should a Cardinal receive exactly a two-thirds majority his paper is opened, and if it is found that he has voted for himself the election is declared void. The ballot-papers are destroyed in a stove after each ballot. Although the Cardinals are cut off from contact with the outside world during the Conclave, fresh food and letters are passed in to them through revolving-doors.

A RACIAL AMALGAM.

"CANADIAN MOSAIC...": By JOHN MURRAY GIBBON.*

An Appreciation by SIR JOHN SQUIRE.

THE ordinary Briton who has not visited Canada tends to think of it as being inhabited almost entirely by people of British and French descent. This at one time was true, but the immigration of the last generation has been so various that the racial surface of Canada is now almost as kaleidoscopic as that of her great neighbour. Mr. Gibbon, a Scot by birth, who has lived in Canada for thirty years, gives in this book a summary of the country's racial components, but in no dry manner. Each ingredient calls for its own historical and cultural sketch, and the net result at the end is that one feels one has just read a lively and personal History of Canada.

The cheerful style of the book may be illustrated by the first sentences. "The Man of the Old Stone Age had grown to be more or less like ourselves, at least in outward appearance, about twenty-five thousand years ago, so that our survey may as well begin with him. People who write learned books about him call him the Crô-Magnon Man, or Crô-Magnard, and an attractive reconstruction of his head and face has been modelled by a sculptor, J. H. McGregor. He looks like a Stoney Indian, and whenever I meet one particular Stoney Chief at the time of the Indian Days at Banff, I think of this Crô-Magnard and feel tempted to say: 'Hello, old man, here we are again!'"

That seems a long way from Mr. R. B. Bennett and the late Sir Robert Borden; but the connection is made by the Basques, who are supposed to be the oldest breed of men in Europe (it is safer, ethnologically, to talk of breeds—as with horses and dogs—than of races), and who apparently fished on the Banks before there was any French settlement in Canada. The Basques did not, in any quantities, settle in Canada; but whenever there was trouble in Europe, somebody went there. "Huguenots—Scots—Irish—Puritans—northbound trek of the United Empire Loyalists"—that is the sort of synopsis one gets in Mr. Gibbon's earlier chapter-headings. Thereafter we reach great floods of emigrants from Scotland, Ireland and Wales; then we come to Germans and Scandinavians; and then, owing to troubles in this hemisphere, to Finns and Poles, Ukrainians and Russians, Greeks, Rumanians, Bulgars, and Magyars, all people tired of the perpetually changing ideologies and frontiers in Europe, and going off to "the remote Bermoothes" for a peaceful domestic life. Mr. Gibbon thinks that they will all settle down together, forget their origins and their old European folk-songs, legends, and dresses, and produce a Canadian type. It may be done, and the type will be a good one; the United States is in process of producing a type which is "American" and nothing else, and very serviceable to the world it has already proved itself. But with modern communications, and everything shifting so rapidly, it is not so easy to establish a breed as it was. "Saxon and Norman and Dane are we," wrote Lord Tennyson, when the beautiful Princess Alexandra came over to marry the Prince of Wales. But they all had time to establish the breeds; "the Narrow Seas," relative to us, were wide seas; the circuit of the planet



AN ENGLISH-CANADIAN TYPE—ONE OF THE TWENTY-ODD NATIONALITIES FORMING THE ETHNOLOGICAL AMALGAM OF CANADA: A CHARACTERISTICALLY WELL-CHOSEN ILLUSTRATION IN "CANADIAN MOSAIC."

had not been flown, and Man had not grown too big for his boots.

There are moments when one wishes that all the nations of the world could be cut off from each other for twenty years, and given time to settle down. That, I suppose, since our first forefathers were expelled from Paradise for curiosity, will not happen; one's dreams of Utopia on this earth are doomed to frustration.

Meanwhile, coming down to earth, I must confess to being not merely interested, but excited, by the dauntless hope of this book about the welding of a new nation. There are moments when we are oppressed by the cruelty in the world; this book is full of stories of kindness. General Murray wrote a despatch, after Wolfe's death, in which he referred to the French Canadians as "a race who, could they be indulged with a few privileges which the laws of England deny to Roman Catholics at home, would soon get the better of every national antipathy to their conquerors, and become the most faithful and useful set of men in this 'American Empire.'" When we were in the middle of the fight against Napoleon, our cousins in the States launched an attack on Canada, telling the inhabitants that they were going to be freed from "tyranny and oppression," and the reply, truly British (if I may say so, in the presence of so many Canadian Czechs and Russians), was:

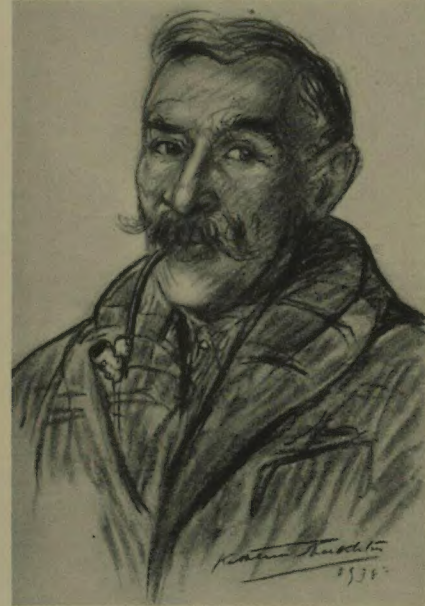
"Where is the Canadian subject who can truly affirm to himself that he has been injured by the Government of Great Britain in his person, his liberty, or his property? Where is to be found in any part of the world a growth so rapid in wealth and prosperity as this Colony exhibits, settled not thirty years ago by a band of veterans exiled from their former possession on account of their loyalty?"

Mr. Gibbon quotes well. His verse is not so good as his quotations. He appends to that last passage a ballad of his own composition, which begins—

"Sing of a soldier
come of Channel
stock,
Tough eighteen-
twelver, Isaac
Brock,
None could be
bolder, steady as
a rock,
Canada's hero, Isaac
Brock,
Outbluffed Yankees
found him too
adroit;
With his little force
he took Fort
Detroit."

Copyright is secured for these verses; there will be certainly no piracy by me. But, the verses apart, it is a good, affectionate book, reminding us at "home" of what has been done overseas by those adventurous relatives of ours who have walked into uninhabited regions and made farms and towns, capital cities, railways, concert-rooms, and publishing offices.

A few years ago England had no publicity abroad. We have now an institution called "The British Council" which gets a little Government money to send Generals to Yugoslavia to tell the Yugoslavs that Britain is Prepared. Wouldn't it be a good idea to have a parallel institution, well staffed and costing each year less than the price of a destroyer, which might keep, by books and lectures, the Dominions and ourselves in close touch with each other? It would be a pity if we let the whole thing go by default.



TYPICAL OF THE WIDELY DIFFERING EUROPEAN STOCKS WHOSE BLENDING TOGETHER IN CANADA PROMISES TO PRODUCE A NATION OF UNIQUE QUALITIES: (L. TO R.) A WELSH-CANADIAN GIRL; A GERMAN-CANADIAN GIRL (BAVARIAN); AND A FRENCH-CANADIAN TYPE.



PEOPLES OF A LAND WHICH IS A LIVING REFUTATION OF ALL THEORIES OF INBORN RACIAL ANTIPATHIES AND OF THE SUPPOSED DEGENERACY OF MIXED NATIONS: (L. TO R.) AN IRISH-CANADIAN GIRL; A HEBREW-CANADIAN GIRL; AND A SCOTS-CANADIAN MAN—TYPICAL OF THREE BREEDS WHICH ARE ALL MAKING THEIR CONTRIBUTION TO THE GREAT FUTURE OF CANADA.

Reproductions from "Canadian Mosaic...": by Courtesy of the Publishers, Messrs. J. M. Dent.

*"Canadian Mosaic..." The Making of a Northern Nation. By John Murray Gibbon. Illustrated. (J. M. Dent; 21s.)

FROM SILKS TO A.R.P. SHELTERS: THE BRITISH INDUSTRIES FAIR IN LONDON AND BIRMINGHAM.



AT THE BRITISH INDUSTRIES FAIR, WHICH OPENED IN LONDON AND BIRMINGHAM THIS WEEK: PUTTING THE FINISHING TOUCHES TO A BIG MODEL OF THE GLADSTONE DOCK, LIVERPOOL, IN THE CASTLE BROMWICH SECTION. (Keystone.)



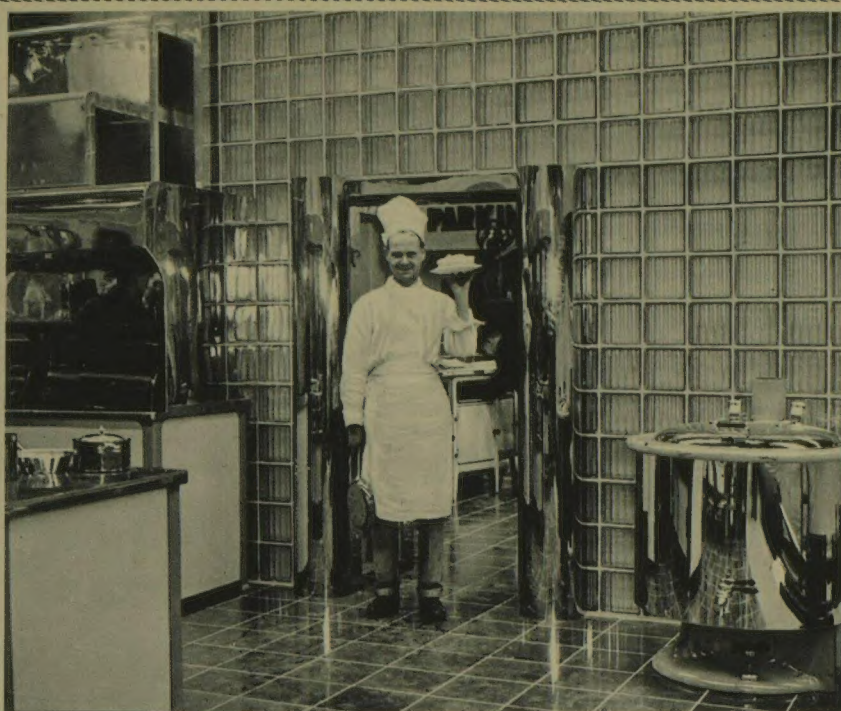
THE HIGH QUALITY OF BRITISH FINE FABRICS IN THE FAIR: A WEDDING-GROUP DISPLAY IN THE HALL OF FASHION AT EARLS COURT. (Topical.)



ADVERTISING SOUTH WALES IN THE FAIR: A MODEL OF SWANSEA CASTLE IN SHEET TIN AND COPPER, ILLUSTRATING THAT CITY'S INDUSTRIES. L.N.A.



THE QUEEN PAYS A VISIT TO THE FAIR AT EARLS COURT: HER MAJESTY EXAMINING A MODEL OF THE CANADIAN PAVILION AT THE NEW YORK WORLD'S FAIR, WITH MR. VINCENT MASSEY, CANADIAN HIGH COMMISSIONER, BESIDE HER. (P.N.A.)



AN ULTRA-MODERN KITCHEN IN THE BIRMINGHAM SECTION OF THE B.I.F.: A DESIGN THAT INCLUDES WALLS OF GLASS AND A GLASS FLOOR, WITH CHROMIUM FITTINGS, GIVING A MAXIMUM OF LIGHT AND CLEANLINESS. (L.N.A.)



ONE OF MANY A.R.P. DEVICES EXHIBITED IN THE BIRMINGHAM SECTION: A SHELTER SUNK BENEATH THE GROUND AND COVERED WITH SAND-BAGS. Keystone.



A PARTICULARLY INGENUOUS A.R.P. IDEA WHICH IS ATTRACTING MUCH ATTENTION AT THE FAIR: A SHELTER PROTECTED BY A MOUND OF CONCRETE BALLS DESIGNED TO DEFLECT A DIRECT HIT. (Keystone.)

The British Industries Fair opened on February 20, the heavy industries section being at Castle Bromwich, Birmingham, the remainder divided between Olympia and Earls Court in London. In accordance with the usual practice no opening ceremony was held, business beginning as soon as the doors opened. The Fair remains open until March 3. H.M. the Queen visited Earls Court on the morning of February 20. She will accompany the King in a tour at Olympia on February 27, while his Majesty will inspect the Birmingham section on March 1, and spend the next morning at Earls Court. An interesting feature of this

year's Fair is that it was preceded by the broadcasting of a special message delivered by Mr. Oliver Stanley, President of the Board of Trade, inviting German buyers to the Fair. The number of buyers attracted to the Fair this year has shown a considerable increase. In the scientific instrument manufacturers' section at Olympia, a predictor and an anti-aircraft searchlight are on view, by special permission of the War Office. The searchlight, which emits a 10,000-watt beam, is of the type intended for use in the defence of London. During the Fair it will remain switched on and rotating continuously at the rate of one turn a minute.

THE EXCAVATIONS ON THE SITE OF WHITEHALL PALACE:

PHOTOGRAPHS BY



AN ARCHAEOLOGICAL EXCAVATION OF PART OF THE SITE OF WHITEHALL PALACE INITIATED BY THE OFFICE OF WORKS: WORKMEN UNCOVERING THE FOUNDATIONS OF THE QUEEN'S APARTMENTS, BUILT TO WREN'S DESIGNS IN 1688-89.



FORMING PART OF THE REBUILDING CARRIED OUT BY CARDINAL WOLSEY AT YORK PLACE (WHITEHALL): THE PRIVY KITCHEN; SHOWING THE GREAT FIREPLACE WITH AN OVEN BEYOND AND A SECTION OF THE PAVED FLOOR.



THE SOUTHERN END OF THE GREAT HALL, WHICH WAS BUILT FOR CARDINAL WOLSEY IN 1528: A PHOTOGRAPH SHOWING THE BLACK AND WHITE CHEQUER-PATTERN ON A WALL AND THE EARLY BRICK-PAVED FLOOR (LEFT).

The excavations which are being made on the site of part of Whitehall Palace in preparation for the building of a new block of Government offices have revealed material of great historical interest. As this must inevitably be destroyed as the work progresses, the Office of Works is compiling a careful record of all that remains of the Palace by means of photographs and an accurate survey of the site. The area under examination is bounded by the Embankment on the east, the roadway of Whitehall on the west, and by Horse Guards Avenue on the north. Richard of Ely, Bishop of London,



SHOWING ONE OF THE CURVED FLIGHTS OF STEPS WHICH LED DOWN TO THE RIVER AT EACH END; THE TERRACE GARDEN BUILT FOR QUEEN MARY TO WREN'S DESIGNS BETWEEN 1601 AND 1603.



A SECTION OF THE RIVER WALL WITH ONE OF SIX SEMI-CIRCULAR BASTIONS UNCOVERED ON THE WHITEHALL SITE: AN EMBANKMENT BUILT ABOUT 1535 WHICH LIES 300 FT. BEHIND THE PRESENT WALL.

had a house on the site in the twelfth century and the property was later sold to the see of York and was known as York Place. Between 1480 and 1500 extensive rebuilding was carried out and Thomas Wolsey, who became Archbishop of York in 1514, made further alterations which involved the rebuilding of the great hall, the chapel and the great gate towards the street. On Wolsey's fall, Henry VIII, seized his properties, including York Place, which he linked up with the demesne of the Hospital of St. James the Less. York Place, or Whitehall as it was renamed, became the residence

WOLSEY'S GREAT HALL AND OTHER INTERESTING DISCOVERIES.

CENTRAL PRESS.



THE KING'S WINE-CELLAR: A PART OF WHITEHALL PALACE WHICH WAS INCORPORATED WITH CADOGAN HOUSE IN THE EIGHTEENTH CENTURY AND HAS NOW BEEN CLEARED OF RUBBLE, REVEALING A WATER-CHANNEL, THE BRICK STILLAGES, AND TWO ORIGINAL DOORWAYS.

of the Court. In 1698 Whitehall was completely destroyed by fire except for the Banqueting House, designed by Inigo Jones in 1619, which had been added to the Palace by James I. Of the twenty-three acres which the royal palace covered when completed, about two are now being excavated, and the discoveries made include a portion of the Great Hall of Cardinal Wolsey, with a wall decorated in black and white squares; the Countess of Falmouth's apartment; the Privy Kitchen; and the earliest embankment wall of the river—built of Kentish ragstone and still standing ten feet above its footings.

The King's Wine-Cellar, which was incorporated in Cadogan House in the eighteenth century, has had the modern floor and the rubble filling below removed, and this has revealed the brick stillages round the wall, on which the barrels of wine were placed, and two original doorways. Beneath the floor have been found the chalk foundations of an earlier building. This wine-cellar was linked by a lobby to the Great Hall, which also provides evidence of having been built over an earlier building. Drawings of Whitehall Palace will be found on "Our Notebook" page in this issue.

THE WORLD OF SCIENCE.

A CHINCHILLA-FARM IN NORFOLK.

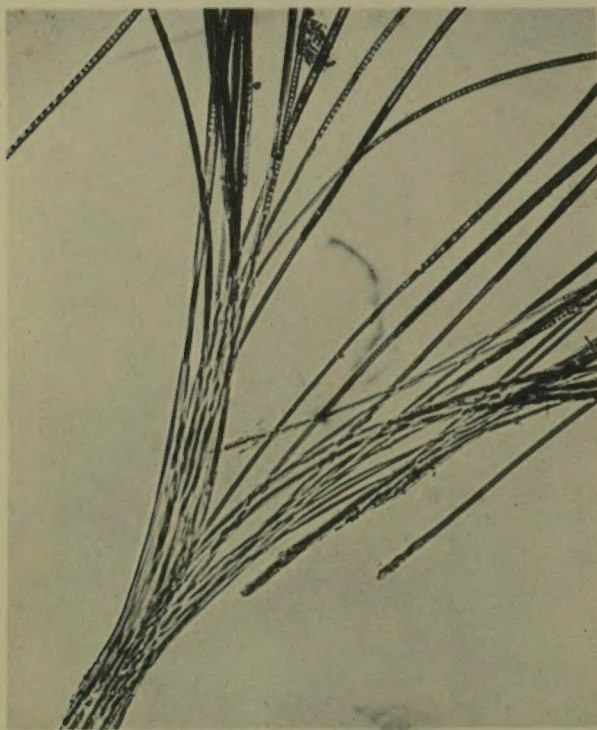
By W. P. PYCRAFT, F.Z.S., Author of "Camouflage in Nature," "The Courtship of Animals," "Random Gleanings from Nature's Fields," etc.

Our readers may remember that we published photographs of chinchillas in our issue of Dec. 3 last year, and also gave an account of the new industry, concerned with the breeding of these animals, which has arisen in the U.S.A. Below Mr. Pycraft describes a similar venture in this country, and discusses the life-history and some of the peculiar characteristics of the chinchilla.

ANY attempt to save animals which have come within the pale of extermination is to be welcomed: and the fur-bearing animals are, many of them, in sore straits. The chinchilla (Fig. 1) is one of these. About sixteen years ago, to supply the furriers, a chinchilla-farm was started with a breeding-stock of no more than eleven animals, which now number over 1500, and are valued, according to one account, at round about £400,000! Stock, however, from this farm may not be sold in Great Britain. But I am glad indeed to know that Mr. C. Hamblen-Thomas is seeking to remedy this by starting a farm at Caister, near Great Yarmouth, in conjunction with Mr. Fletcher Roberts. Mr. Hamblen-Thomas a short time ago wrote to tell me of his venture, and sent me some photographs of some young animals recently bred on this farm, as well as a specimen of the fur, together with some of the hairs as they appear under the microscope. The venture has interested me greatly, so much so that I record it on this page, feeling sure that it will interest my readers.



1. SHOWING THE LARGE EARS, THE LONG "WHISKERS" AND THE PECULIARLY SOFT GREY FUR: A CHINCHILLA FROM A BREEDING-FARM IN NORFOLK.



2. REVEALING UNDER THE MICROSCOPE ALTERNATE BLACK AND TRANSPARENT RINGS ON THE HAIRS: A SMALL TUFT OF CHINCHILLA FUR. (HIGHLY MAGNIFIED.)

All who are enamoured of fur coats will know well what Chinchilla fur is like, but I more than suspect that only a few will know anything of the animal's life-history. Let me say, then, that the chinchilla is one of the rodent tribe, of about ten inches in length, and with a beautiful soft grey fur, developed to withstand the chilly weather of the alpine zones of the Andes. It ranges from the north of Peru to the south of Chile. Its large eyes and ears are an adjustment to its nocturnal habits. The fore-feet have five toes, but the hind-feet only four, the innermost having a curious flat, nail-like claw. I can find no information as to what it feeds on in its wild state, but there would seem to be a very special diet, owing to the extraordinary length of its large intestine. Those on this Norfolk farm, I am told, are thriving on clover-hay, maize—from which they eat the germ only—nuts, raisins, and a little green stuff, or fresh fruit.

One very remarkable feature of the skull of the chinchilla is found in the enormous size of the "bulla," which forms the ante-chamber to the internal ear. As will be seen in Fig. 4, the bullae of the right and left sides of the skull form two great chambers of bone concealing nearly the whole base of the skull, and nearly touching one another

in the middle line. The side view of this bulla (Fig. 3) is also remarkable, not only because of its great size, but also because of the exceptionally large size of the aperture to which the base of the external ear is attached. Nothing has been recorded of its habits in a wild state which would account for the excessive size of these chambers to the internal ear, nor for the great size of the upward and

the fork is seen, the more forward portion having fused with the skull.

Mr. Hamblen-Thomas draws my attention to the fact that in regard to the fur he finds several hairs issuing from the same hair-pocket, or "follicle." This is interesting, but we find this to be true of several very distinct types of mammals, and some rodents.

In the jerboa, for example, twelve or thirteen may arise from a single pocket. The paca shows three stout hairs alternating with three slender ones, while in the American monkey midas three hairs of equal size emerge from the skin together. In their structure, when highly magnified, as will be seen in Fig. 2, these hairs are shown to be excessively fine, and have a series of black discs with intermediate clear spaces between, though in some the black discs are wanting. They depend, probably, on the age of the hair. The softness of the fur of the coat of this little animal is easily understood when seen under the microscope. The hairs are nearly as fine as the silk thread of a silkworm, and stand in very striking contrast with the hairs of the bats, which, under the microscope, present a series of rings of spines standing well away from the shaft, and pointing towards the tip. I have never made an exhaustive study of the hairs of different types of mammals, but I should be surprised to find any as long and delicate as those of the chinchilla. In this connection,

backwardly-directed aperture for the attachment of the external ear. On this point those who are keeping chinchillas in captivity may be able to throw some light, as to whether, for example, the sense of hearing is particularly acute, and whether the ears display much movement. It is to be noted, however, that similar conspicuously large bullae are found also in the Cape jumping-hare.

It will be noted, in Fig. 4, that the upper molar teeth are set, in each jaw, so as to converge in front, the right and left rows nearly meeting.

This is true of many rodents. But the hares and rabbits have the tooth row not only shorter, but widely separated, those of the right and left sides being parallel. What has brought about these differences no one, at present, can say. Comparisons between the movements and rate of movements of the jaw in the domesticated chinchilla and rabbit, when feeding, would be useful.

But more than this. To accommodate this huge bulla, it will be noticed, the hinder border of the lower jaw has become hollowed out, and the consequent curved border lies entirely below the level of the grinding surface of the molar teeth, while the hinder end of the bony "jugal-bar," which lodges the articulation for the lower jaw, is continued backwards as a narrow bar of bone, forked at its termination, and with the outer branch of the fork lying over the aperture. In the hares and rabbits only the outer branch of

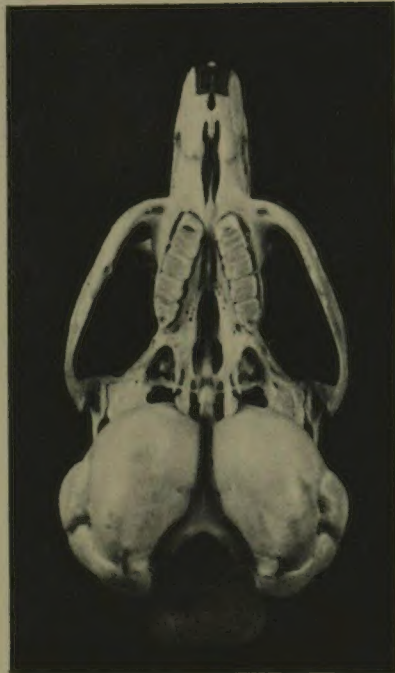


3. A CHINCHILLA SKULL AS SEEN FROM THE SIDE: A PHOTOGRAPH SHOWING THE LARGE TUBULAR APERTURE OF THE BULLA AND THE GREAT SIZE OF THE OPENING ABOVE THAT FURNISHES THE ATTACHMENT FOR THE OUTER EAR.

Photograph by E. J. Manly.

it would be interesting to compare them with some of the nearly-allied viscacha, an animal of most curious habits and very distinctive coloration. It is to be hoped that Mr. Hamblen-Thomas will, some day in the not distant future, make sections through the skin, with the hair *in situ*, both in the direction of the long axis of the hair and transversely to this. It has never, I suspect, been done, and it would certainly yield some valuable information, for the hair, which was sent me for examination, had, I feel sure, been plucked from the skin. Sections such as those now suggested would show the hair follicles, each with a small bundle of hairs, instead of the usual single hair to each follicle or "pocket." There is also need for information as to the embryonic stages of these hairs. The fact that the chinchilla has no under-fur, though living under Alpine conditions, where, theoretically it would be needed, is perhaps explained by the fineness, and length of the hairs, which are closely packed all over the skin.

It is greatly to be hoped that the Caister chinchilla-farm will prove a completely successful venture, supplementing the similar farms in America. The numbers bred for marketing may soon become sufficiently large to make trapping wild chinchillas unprofitable, and thereby save this most interesting animal from extinction. Much will depend upon whether the change of climate, in the course of time, will affect the marvellously silky quality of the fur. It may coarsen. None of the other nearly-related species can really fill its place.



4. FORMING TWO GREAT CHAMBERS OF BONE CONCEALING NEARLY THE WHOLE BASE OF THE SKULL: THE ENORMOUS AIR-CHAMBERS, OR BULLAE, LEADING TO THE INTERNAL EAR, AS SEEN ON THE UNDER-SURFACE OF A CHINCHILLA'S SKULL.

It should be noted that the bullae nearly meet one another in the middle line and that the molar teeth are set so as to converge in front, the right and left rows nearly meeting.

Photograph by E. J. Manly.

SECRET TOTEMIC CEREMONIES OF ARNHEM LAND: AN ABORIGINAL NGARRA.

PHOTOGRAPHS COPYRIGHT BY DR. DONALD F. THOMSON.



ONE OF THE SECRET NGARRA CEREMONIES OF THE ABORIGINES OF ARNHEM LAND, IN NORTHERN AUSTRALIA, WHICH DR. DONALD F. THOMSON HAS SUCCEEDED IN PHOTOGRAPHING: THE "WHALE DANCE" BY CEREMONIALLY PAINTED MEN, WHO RE-ENACT MYTHOLOGICAL HAPPENINGS.



RE-ENACTING IN PANTOMIME THE DOINGS OF THEIR TOTEMIC ANCESTORS: A GROUP OF ABORIGINES DANCING ON THE SECRET NGARRA GROUND, WITH THE SHADE-HOUSE OF BOUGHS, SEEN BEHIND—THIS BEING "THE HOLY OF HOLIES," IN WHICH LIE THE TOTEMIC OBJECTS, CALLED RANGA.

Dr. Donald F. Thomson is already well known to our readers from his remarkable contributions to the better understanding of the mind of the aborigines of Northern Australia. On this and the succeeding pages we give a number of photographs, together with an article, by Dr. Thomson, dealing with the spiritual life and the mythology of the aborigines of Arnhem Land. Most of the ceremonies illustrated have never been witnessed by a white man before, much less photographed. On this page we illustrate two of the ceremonial dances upon the sacred *ngarra* dance-ground on which the initiation ceremonies of the series called *mardai'in* are held. Only men take part in these totemic celebrations (which may last many months),

and on a later page will be found photographs showing the ceremonial driving away of the women from the fringe of the camp. The dances depict, in pantomime, a recapitulation of the activities of the totemic ancestors as recounted in the aborigines' mythology. This mythology, as is explained in the article on the following page, plays a living part in the existence of every tribe or clan. The myths supply the charter not only for every ceremonial act, but also for every edict of the old men—the so-called "tribal council." In the background of the lower photograph is seen the sacred shade-house, the holy of holies in which *ranga* totemic objects are laid until their revelation, which is seen upon page 291.

TOTEMISM AND CEREMONIAL LIFE IN ARNHEM LAND:

THE BELIEFS OF NORTH AUSTRALIAN ABORIGINES, WHOSE SECRET NGARRA CEREMONIES ARE SEEN IN THE PHOTOGRAPHS ON THE PRECEDING AND FOLLOWING PAGES.

By DR. DONALD F. THOMSON.

On the preceding and following pages we reproduce Dr. Thomson's remarkable photographs of the secret ngarra, the totemic ceremony of the Arnhem Bay aborigines. In the article printed below Dr. Thomson gives an account of the mythology and the spirit-beliefs of these people, which form the background of this elaborate ceremonial.

MYTHOLOGY AND SPIRIT LIFE.

MYTHOLOGY forms one of the most important stepping-stones to an understanding of the Australian aborigine, for myth furnishes the background, supplies the motive force, for the regulation of conduct, of behaviour, and of ritual observance. It is bad practice as a rule to ask abstract questions of primitive people, particularly in regard to their own behaviour, but if you ask an Arnhem Land native why he does something, he will reply almost invariably, "From old fashion." That is, "The totemic ancestors did it, and therefore we do it too." The myths of these people, which are recounted on all important ceremonial occasions, are more than "just-so" stories. They supply the charter not only for every ceremonial act, but for every edict of the old men—the so-called "tribal council." But though this tribal council is important, it does not exist as an organised body. The old men are the rulers, and they are the custodians, in each generation, of the mythology; they constitute the storehouse, the repository, of traditional knowledge in the absence of a written language. For the mythology, besides furnishing the traditional background—supplying, as it were, a precedent for every act—also furnishes the means of enforcing the customary behaviour: by furnishing the punishment for departure from it. Mythology supports the belief in a ritual or a supernatural visitation that comes upon those who disregard or disobey the law of the old men. When this belief in the old men and their power—which, under tribal conditions, I have never known to be abused—dies, or declines, as it does with "civilisation," chaos and racial death follow immediately.

Moreover, myths are regarded by these people as their "Book of Genesis," their story of creation. They believe that these myths recount literally the origin of their race and the development of their culture. While each clan has generally its own special myths telling of its own origin, and supplying its title to its own peculiar totems, the general scheme, the beliefs about the origin and behaviour of these ancestors, is remarkably uniform not only in Arnhem Land but throughout Australia. The totemic ancestors were not born, in the words of my informants, they "happened," in the beginning—in the "high and far-off times," as it were. They were not like ordinary mortals: they were endowed with very special powers and were able to perform miraculous deeds—the sites of many of which are marked by stones, water-holes, or other geographical features. Eventually these ancestors sank into the ground—leaving a rock, or, in Arnhem Land, more frequently a water-hole, to mark the spot. These are the sacred places, called the *mardai'in* place, or *mardai'in kapu mangolji*—simply the totemic water-holes. *Mardai'in* is the "outside" term, the profane or non-sacred name for the totem; *ranga* is the "big," "secret," or sacred name. From these *mardai'in mangolji*, in Arnhem Land, the spirits of the babies come and enter their mothers—when the body of the child has been formed and the mother is pregnant. And it is to these sacred water-holes that the "shade" or "ghost"—but not the "spirit"—goes at death.

These *kapu mangolji* form the centre of the sacred or spiritual life of the people, and are intimately linked with totemism. Associated with each of these totemic water-holes is a single clan totem—the *mardai'in* itself. When a *mardai'in* ceremony is to be held, a representation of the totem is made, generally from wood, more rarely from paper bark (*Melaleuca*), or even from stone, and this represents the "shade," the *mali* which, among these people, means the material "presence," of the totemic ancestor. Not only does the form of these *ranga* follow a set tradition, but the painting of the *ngarraka*, the "bone" or skeleton (*i.e.*, the wooden skeleton part of the *ranga*) must be painted also in the appropriate *mintji*—in the design that is believed by the members of the clan to have been present on the body of the totemic ancestor, the culture hero himself, when he performed the deeds of which their own ceremony is a recapitulation. This pattern was present in the body of the culture hero when he "sank down" to form the sacred well, which is literally the "well of life" of the clan. And again, the right to use certain materials is further restricted, though in this case not to members of a single clan group but to all members of the same "moiety." Thus the right

to use the tassels of opossum-fur string with ceremonial rosettes of white feathers, shown in the coloured plate of the *Niwurda ranga* (see page 294), belongs exclusively to mem-

bers of the *Yiritja* moiety and may not be used by any member of the opposite moiety, the moiety called *Dua*.

THE MOIETY DIVISIONS.

Here it must be explained that the dual division cuts through the whole of native society in Arnhem Land, separating the groups or clans into two divisions with the



THE REMARKABLE "DRESS" ASSUMED AT THE END OF AN ABORIGINAL NGARRA CEREMONY: A MAN WITH HIS BEARD SHAVED, SAVE FOR A TUFT WITH FEATHERS ATTACHED TO THE END; AND DISTINCTIVE BODY PAINTINGS.

At the end of a *ngarra* ceremony the beards of the old men are shaved, except for a tuft on the chin to which a terminal tuft of feathers is attached. All the participants, as well as the women and the children of the camp, are painted on the final day of the *ngarra* and ritually washed at a spectacular ceremony.



EMBLEMS OF LIBERATION FROM THE TABUS IMPOSED UPON INITIATES DURING THE NGARRA CEREMONIES: THE INTRICATE PATTERNS PAINTED UPON THE BODIES OF FOUR MEN TO WHOM THE TOTEMIC MYSTERIES HAVE BEEN REVEALED.

In addition to the designs painted during the progress of the *mardai'in* or *ngarra* ceremonies, very intricate and elaborately executed totemic designs (also highly sacred) are painted upon the bodies of the fully initiated men after they are freed from the food and other tabus which result from attendance at these ceremonies.

Photographs copyright by Dr. Donald F. Thomson.

rule of "exogamy"—or marrying-out. These divisions, or "moieties," as they are known to anthropologists, are termed by practically all the aborigines in Arnhem Land *Dua* and *Yiritja*.

While people of the *Yiritja* moiety have a monopoly of opossum fur, groups of the opposite moiety, *Dua*, have the exclusive right to employ the fine orange-red breast feathers of the Red-collared Lorikeet, called *lindirrit*, as seen in the splendid "sun" *ranga* in the coloured plate

(page 294). A few feathers of the Red-collared lorikeet may be used in the opossum-fur string tassels of *Yiritja*, as will be seen in the "sugar-bag" *ranga*, but these must form only incidental decoration, and may never be used freely as they are by members of the opposite moiety, to which they belong by traditional right. The significance of this lies in the fact that *marango*, the opossum, is a *Yiritja* animal, while *lindirrit*, the Red-collared lorikeet, is a *Dua* bird.

At the conclusion of the ceremonies on the *ngarra* ground, which may occupy several months, the opossum string, and armlets, in *Yiritja ranga*, and the feather armlets, in the case of *Dua*, are stripped off. These are presented ceremonially to certain individuals and are eventually made into armlets or into tassels to adorn certain types of dilly bags—both of which are used in fighting and also on all important ceremonial occasions. They carry *marr* (mana) and confer special prowess upon the wearer. But he, in turn, is under obligation to make very large reciprocal presents of food and of material gifts to the group to which the *ranga* belonged.

The *ranga* themselves are returned to the sacred water-holes or wells of the totemic ancestor with which they are associated. They are very sacred; they possess many "secret," "big" names which are known only to the very old men, and as they partake of the *marr*, the spiritual power, or essence, of the totemic ancestor itself. A man is believed to be in a state of danger when he first sees a new *ranga*, and accordingly a number of tabus, particularly on the eating of flesh foods, are set up. An initiate has to pass through an elaborate and complicated series of rites, including tabus on the eating of many foods, and a ceremonial washing, before he is liberated from the food restrictions. After this he may be painted with the very elaborate and finely executed design appropriate to the totem, and of which a fine example, from the *Mildjingi* clan, is shown in the coloured plate on page 293.

CULTURE MYTHS.

As already mentioned, there are, in Arnhem Land, some myths of wider application—myths that form the background of cults that are common to several tribal groups, in addition to the myths which are the special property of a single clan. It is a remarkable fact that although women have now no important place in ceremonial life and activities, except in the preparation of sacred food, many of the totemic ancestors were women. In at least two cases they were sisters who, though apparently unmarried, bore children and gave rise to a new clan or a new group, which ever afterwards commemorated, in its ceremonial life, the miraculous deeds of its mythical ancestresses.

The most important of these were two sisters called *Djangawoo*, who are associated with the sun and who were responsible for the introduction of very many of the clan totems in north-eastern Arnhem Land. These two sisters came westwards, voyaging on a raft made from tea-tree bark, from somewhere on the Gulf of Carpentaria, landing at Port Bradshaw, just to the north of Caledon Bay. When they set out they loaded this raft, called *tjulu*, with objects that afterwards became *mardai'in* (*ranga*) totems, and as they journeyed westwards the women left these objects behind, where they were generally turned to stone—marking the sacred places which are to-day still associated with cults. Each of these women carried two yam sticks—the typical woman's implement or digging-

stick—but of a special type, and when she danced she stuck these deep into the ground so that water gushed out, giving rise to water-holes or springs of water of a peculiar type, now called *milmindjarrk*. Some of these are very sacred, and an old man who had a large tumour on his neck pointed to it and explained to me that it was due to his having, in his youth, drunk the water from a *milmindjarrk* place. As a result, the *Djangawoo* women had struck him with a "spirit" (*mali*) *bilma*—an implement made of ironwood and employed by women in the preparation of food. This was a ritual punishment; he did not believe that a woman had struck him with an actual *bilma*. Eventually, these two women reached Elcho Island, where they have left many of their *mardai'in*, and thus Elcho Island is one of the most important centres in the sacred and ceremonial life in all Arnhem Land—a place bristling with sacred totemic stones.

The myth recounts that during their odyssey, when the women were away hunting, a number of men stole their possessions and carried them off to their own ceremonial ground, the *ngarra*. Ever since that time men have kept these totemic objects, these *ranga*, for themselves, and the women have been excluded from the sacred places. Curiously enough, a somewhat similar belief exists in connection with the sacred bull-roarers on Cape York Peninsula—where it is recorded that two girls found and played with these sacred objects in ancestral times. So the totemic and other ceremonies of to-day are a recapitulation in pantomime of the miraculous deeds of the mythical ancestors, as recorded in mythology, and the social function of myth is manifest.

THE REVELATION OF THE RANGA—CLIMAX OF THE NGARRA: ARNHEM LAND TOTEMISTIC CEREMONIAL; AND A NATIVE ARTIST.

PHOTOGRAPHS COPYRIGHT BY DR. DONALD F. THOMSON.



THE CLIMAX OF THE NGARRA CEREMONIES—THE REVELATION OF THE INNERMOST TOTEMIC MYSTERY: THE SACRED RANGA BROUGHT FROM ITS SHADE-HOUSE AND EXPOSED BEFORE THE TERRIFIED INITIATES.



WONGO, AN ABORIGINE ARTIST OF CALEDON BAY, WORKING AT A DRAWING UPON BARK; THE TRIANGULAR AREAS REPRESENTING HIGHLY CONVENTIONALISED CLOUDS, WHICH ARE PROMINENT IN THE MYTHOLOGY OF EASTERN ARNHAM LAND



THE CONSECRATION OF THE SACRED FOOD: THE DALKARRAMIRRI, OR "HIGH PRIEST," CALLING THE "BIG NAMES" OVER THE PARCEL OF FOOD IN THE ASHES; WHICH HENCEFORWARD IS TABU TO WOMEN AND UNINITIATES.



THE RANGA, THE PROFOUNDLY SACRED TOTEMIC OBJECT, REPRESENTING TUKORORO, A TOTEMIC ANCESTOR, WHICH INITIATES ONLY DARE LOOK UPON AFTER RITUAL PRECAUTIONS TO PRESERVE THEIR HEALTH AND PROTECT THEIR EYESIGHT.

The first illustration on this page shows the climax of the initiation ceremonies among the Wanguri aborigines of Arnhem Bay—the actual revelation of the Tukororo *ranga* to the initiates. The *ranga*, representing in this case the "Shade" of the totemic ancestor, Tukororo, is brought from the shade-house of boughs. On the left is seen the *dalkarramirri*, a sort of high priest, who calls the secret names of the *ranga*. The initiates are stricken with fear at the revelation, and believe they are in a state of spiritual danger when once they have seen it. Severe tabus upon their diet and behaviour are accordingly set up. The fact that the paintings upon the men

(which represent, in highly conventionalised form, the tracks of mythical bandicoots) are crossed upon their bodies is an indication of the advanced stage of the ceremonies. The chronological sequence of the arrangement of these patterns is further illustrated upon the following page. In the consecration of the sacred (*mardai'in*) food, the food is wrapped neatly in paper bark and buried in the ashes for the final cooking. After the "big names" of the totemic ancestor associated with the *ranga* in connection with the ceremony have been called over the food by the *dalkarramirri*, or "high priest," no woman or uninitiated man may even touch it.

DRIVING AWAY THE WOMEN AT THE END OF THE DAY: AN EVENING NGARRA RITUAL; AND STAGES IN BODY-PAINTING.

PHOTOGRAPHS COPYRIGHT BY DR. DONALD F. THOMSON.



BODY-PAINTINGS FOR A NGARRA: A GROUP OF DANCERS IN A NGARRA OF THE YIRITJA MOIETY, THE SINGLE BANDS OF THE DESIGN INDICATING THAT IT IS AN EARLY STAGE OF THE CEREMONIES—WHICH MAY GO ON FOR MONTHS.



THE "DRESS" PROPER TO A LATER STAGE OF THE NGARRA CEREMONIES: A MAN WITH TWO BANDS OF PATTERNING, AND WEARING HIS DILLY-BAG ON A STRING ROUND HIS NECK, AND OTHER ADORNMENTS.

The first two photographs on this page illustrate the painting of the bodies for a *ngarra* of the Yiritja moiety. The designs represent the tracks of mythical bandicoots (the bandicoot being a small pouched mammal). During the initial stages of the *ngarra*, which extends over many months, the design consists of a single band and is confined to one side of the body. At a later stage the designs are painted down both sides of the body, and when the ceremony reaches its climax, the bands are crossed, as is shown in the photographs, on the previous page, of the revelation of the *ranga*. Other features of ceremonial dress are the painting of the forehead, the



THE DRIVING-AWAY OF THE WOMEN AND CHILDREN—A RITUAL PERFORMED AT THE END OF EACH DAY OF NGARRA CEREMONIES AT BLUE MUD BAY: THE MEN ON THEIR WAY FROM THE NGARRA-GROUND TO THE BARNNA FORKED STUMP.



DRIVING THE WOMEN AWAY FROM THE BARNNA FORKED STUMP ON THE FRINGE OF THE CAMP: MEN WITH THEIR SPEARS, AND WOMEN AND CHILDREN COVERING THEMSELVES WITH SHEETS OF PAPER BARK.



CLUSTERED ROUND THE BARNNA STUMP, AFTER THE WOMEN HAVE BEEN DRIVEN AWAY, THE MEN LISTEN TO THE SOLEMN RECITAL OF THE TOTEMIC "BIG NAMES": THE SUNSET CEREMONY ON A NGARRA-DAY.

Painted string armlets, and the ornamental dilly-bag. At the conclusion of the day's programme of the *ngarra*, the men surround a forked stump, called *barnna*, close to the fringe of the camp, and drive away the women and children, who assemble there as the men leave the *ngarra*-ground. The women lie down, or crouch near the ground, covering themselves with sheets of paper bark. The men march up in single file, drive the women away, and the ritual concludes with the calling of the totemic "big names" by the *dalkarramirri*, who is a sort of high priest. Such customs as those illustrated on this page are characteristic of the whole of Arnhem Land.

WE illustrate here a very sacred totemic design from the Mildjingi clan, North Central Arnhem Land, which is painted only on the bodies of men who have undergone full initiation into the group called *bapuro* (an extension of the clan) to which it belongs. It represents, in highly conventionalised form, clouds, which are among the totems of the group. The use of this design occurs at a ritual dedication of the totem in which the *dalkarramirri*, "the caller of big names" (a kind of "high priest" of the totemic group) calls or invokes the "big" names, the sacred or secret names of the totemic ancestors. The design is also painted on the body of a man newly deceased, again on the skull before it is broken up for final disposal in a hollow grave post, called *dupun*; and on the representation of the sacred totem, the *ranga*, itself, which is kept concealed in a secret "shade house" while a *ngarra* ceremony is in progress. The actual execution of such a design on the body may occupy a full day, and it is so sacred that in its fully completed and perfect state no woman or uninitiated man may even look upon it. When the period of tabu that follows initiation to a totemic group is completed and his body painted with this design, a man will either suspend leafy branches in front of his body to hide the sacred *mintji* (design), or he will partially obscure it by smearing it with his hand before appearing in the open camp. In Arnhem Land these totemic designs attain a degree of perfection in colour technique and execution approached nowhere else in Australia. Every clan possesses several such designs, in each of which there are varying degrees of sacredness. These are held as "copyright"; ownership of the design is vested in the group that claims the totem, and "infringement" may be punished by death. These complicated designs are conventionalised and adhere rigidly to a set form, varying only with the degree of skill of the artist and not by intent. The actual clouds (which are a totem of the Mildjingi clan) are represented by the triangular areas, while the finely executed pattern on the margin is called *rarrk*.

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SO SACRED THAT IT MUST BE VEILED OR DEFACED IN THE PRESENCE OF WOMEN AND UNINITIATED MEN:

THE BOLD PATTERN, REPRESENTING CONVENTIONALISED CLOUDS, PAINTED UPON THE BODIES OF FULLY INITIATED MILDJINGI CLANSMEN (ARNHEM LAND); RECORDED FOR THE FIRST TIME BY DR. D. THOMSON.

The "Holy of Holies" in Arnhem Land Totemism, Never Before Revealed to a White Man:

Totems Showing the Restricted Use of Opossum Fur and Parrot Feathers by Two Moieties.



A MOST SACRED TOTEM OF THE NATIVES OF ARNHEM LAND IN AUSTRALIA; REPRESENTING A WILD BEES' NEST IN A CONVENTIONALISED FORM.



WITH "ARMS" REPRESENTING THE RAYS OF THE SUN, WORKED IN THE BREAST FEATHERS OF THE RED-NECKED LORIKEET, WHICH ARE EXCLUSIVE TO THE DUA MOIETY: THE SUN TOTEM—THE MOST SPLENDID IN ALL ARNHEM LAND.

THE totemic objects shown on this page are of the greatest interest from the point of view of anthropology.

They stress the importance of the "dual division," the arbitrary division that cuts through the whole of native society in Arnhem Land, dividing the groups into two divisions with the rule of "exogamy"—or marrying out. These divisions are known almost throughout Arnhem Land as *Dua* and *Yiritja*. Corresponding with the division of human society into two halves, the whole of nature—animate and inanimate—is similarly divided. The distinction finds expression in the exclusive right to use the red breast-feathers of the Red-Collared Lorikeet (*lindirit*) that is claimed by the *Dua* moiety, with a corresponding monopoly by members of the *Yiritja* moiety of the use of opossum fur string or "*bubn'yin*." The bees' nest, or "Sugar Bag" totem, as it is called, represents in highly conventionalised form the "sugar bag" of ancestral times. The hole just discernible at the base of the four terminal points is the *mangotji*, the "eye" of the nest or hive, and the diamond-shaped areas represent comb. Here again the cross-hatched areas represent honey or "*tjukurr*" (fat), and the spotted portions "bee bread" and brood comb. The Sun *ranga*, called *Wallir*, is associated with two women, *Djangauwo*, who in ancestral times made an odyssey from the eastwards, taking the path subsequently followed by the sun. Mythology tells us that these women were responsible for the distribution of most of the *Dua* totems of Eastern Arnhem Land. The long arms represent the rays of the sun. Tens of thousands of feathers were required to make this *ranga*, the finest, and one of the most sacred, in all Arnhem Land. These feathers are obtained from the breast only of the Red-Collared Lorikeet (*Trichoglossus rubitorquatus*). Such objects as these are sacred in the highest degree, and have never been revealed to any but initiated men, and certainly not to a white man.

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THREE GREAT CANALS, IN BELGIUM, GERMANY AND GREECE.



BELGIUM'S GREAT NEW WATERWAY LINKING ANTWERP WITH THE MEUSE NEARING COMPLETION: A SECTION OF THE ALBERT CANAL, SHOWING THE VROENHOVEN BRIDGE.
Associated Press.



ON THE KIEL CANAL, FOR WHICH A VAST WIDENING PROJECT HAS BEEN APPROVED: A PHOTOGRAPH TAKEN FROM A GERMAN WARSHIP ABOUT TO PASS UNDER ONE OF THE BRIDGES, WHICH WILL PRESUMABLY ALL HAVE TO BE ALTERED. *(Keystone.)*



THE CORINTH CANAL REOPENED TO TRAFFIC AFTER A SUBSIDENCE: THE FAMOUS WORK ORIGINALLY UNDERTAKEN BY NERO, AND NOW 72 FEET WIDE AT THE WATER-LEVEL. *(Imperial Airways Photo.)*

So rapid has been the progress of the construction of the Albert Canal, the great new Belgian waterway connecting the River Meuse with the Port of Antwerp, that it is to be opened at the end of the present summer, instead of in 1940 as at first anticipated. Ships of 2000 tons displacement will be able to use the Canal.—It was announced on February 15 that Herr Hitler had given his approval to a vast scheme for the enlargement and improvement of the Kiel Canal. The scheme will enable large vessels to pass through it in both directions at the same time—indeed, vessels of Transatlantic size will be able to pass each other. The double locks at Holtenau and Brunsbüttelkoog are also to be replaced and bridges over the Canal will have to be rebuilt in many cases.—Another famous canal, the Corinth Canal, which joins the Gulf of Corinth and the Aegean Sea, was recently reopened to traffic after a subsidence due to heavy rains. It has considerable strategic importance, shortening the distance from Athens to the Ionian sea by 200 miles.

PHOTOGRAPHS OF INTEREST FROM HOME AND ABROAD.

The Government type of steel air raid shelter for private use was the subject of a special drawing in our last issue, and below we illustrate a test which was given to one of these steel shelters recently, when a ton and a-half of bricks was dropped upon its roof. This shelter is of the type of which 17,000 will be distributed next week to people with incomes of £250 or under. The week after, distribution will be made of 30,000, with increasing numbers later.—The latest arrival at the Rhenen Zoo, in Holland, is a baby Polar-bear. It is hoped that this cub will survive. Although, between 1861 and 1922, twenty Polar-bear cubs were born at the London Zoo, none were reared.—The Post Office is experimenting with a new type of balance to enable the public to weigh their own Empire Air Mail letters for dispatch. It is on the "yard arm" principle; and has been introduced because the old spring balances in post offices are not sensitive enough for the half-ounce letters.



A SEVERE TEST FOR A GOVERNMENT-TYPE STEEL SHELTER: DROPPING 1½ TONS OF BRICKS ON THE ROOF OF THE SHELTER, WHICH IS SEEN SUCCESSFULLY WITHSTANDING THE IMPACT. *(L.N.A.)*



HOW A POLAR-BEAR CARRIES ITS YOUNG: A PHOTOGRAPH TAKEN AT THE RHENEN ZOO, HOLLAND, SHOWING THE MOTHER WITH THE CUB DANGLING FROM HER JAWS.
Wide World.



A POST OFFICE IMPROVEMENT TO SIMPLIFY THE DISPATCH OF AIR MAIL: A NEW SENSITIVE BALANCE ENABLING SENDERS TO FIND OUT WHETHER THEIR LETTERS ARE UNDER THE HALF-OUNCE. *(Keystone.)*

THE KING AND QUEEN VISIT TYNESIDE: EVENTS OF THE ROYAL TOUR.



(UPPER.) THE KING LAUNCHES THE "KING GEORGE V.": THEIR MAJESTIES ON THE PLATFORM BEFORE THE CEREMONY; SHOWING THE BOWS OF THE NEW BATTLESHIP. (P.N.A.)
(LOWER.) THEIR MAJESTIES INSPECT THE ELSWICK WORKS OF VICKERS-ARMSTRONGS: THE KING EXPLAINING THE MECHANISM OF A NAVAL GUN TO THE QUEEN. ("The Times.")

The Royal tour of Newcastle and the North-East began on February 21, when the King and Queen were received at the Central Station, Newcastle. Their Majesties first visit was to the Elswick works of Vickers-Armstrongs, where they saw naval gun-mountings, including those for the new battleship "King George V.," aircraft components, tanks and guns in process of manufacture. After inspecting the

Newcastle General Hospital the King and Queen drove to the City Hall, where 2400 children were assembled, and later took luncheon with the Lord Mayor and Lady Mayoress at the Old Assembly Rooms. In the afternoon the King opened the new building for the Medical School of King's College and launched the new battleship before visiting the Wallsend Infirmary Maternity Block.



THE "KING GEORGE V." LAUNCHED BY THE KING: THE NEW 35,000-TON BATTLESHIP MOVING DOWN THE SLIPWAY IN THE WALKER YARD OF VICKERS-ARMSTRONGSON ON THE TYNE.

Thousands of people had gathered in the Walker Yard of Messrs. Vickers-Armstrongs to watch H.M. the King launch the new battleship "King George V." The King wore the undress uniform of an Admiral of the Fleet. After a short religious service, he pronounced the words: "I name this ship 'King George V.' May God bless this ship and those who serve in her." He then pulled a lever which simultaneously

broke a bottle of champagne against the vessel's side, and started her down the slipway. A band played "Rule Britannia," and the sirens of all the ships on the river began to sound. The "King George V." took the water easily and gracefully, and was taken charge of by the tugs. A double-page drawing of the vessel's appearance when completed is given on the succeeding pages. (Photograph by Planet.)

THE FIRST BRITISH BATTLESHIP TO



LAUNCHED BY H.M. THE KING: AN ARTIST'S IMPRESSION OF THE "KING

The launch of the new battleship "King George V." by the King at the Walker Yard of Messrs. Vickers-Armstrong on February 21 is illustrated on pages 296-297. She is the first of an entirely new type of 35,000-ton capital ship, of which five are under construction, and marks a return to the well-balanced profile so lacking in the "Rodney" and "Nelson." Her

main armament
one twin turret
six guns can
four-gun turret
far heavier pro

